

GETTING MORE FROM



FLIGHT SIMULATOR 2002

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EXPANDING YOUR HOBBY

If you can't get enough of Microsoft® Flight Simulator 2002, you're not alone. The Flight Simulator community includes thousands of individuals, organizations, and companies that share your passion for aviation. Discover the extended world of flight simulation by exploring some of the options listed below.

The Flight Simulator 2002 Web Site

The Flight Simulator 2002 Web site is the best place to start browsing for Flight Simulator-related information and products. You'll find:

- News
- Tips
- Articles
- Reference material
- Downloadable extras
- Links to interesting and useful Flight Simulator sites all over the world

Just open your Web browser and go to **[www.microsoft.com / games / fsim](http://www.microsoft.com/games/fsim)**.

Virtual Airlines

There are dozens of virtual airlines on the Web. Become a pilot for one of them simply by signing up. Each virtual airline has its own style and emphasis: some specialize in cargo operations; some fly passengers. From continent-spanning majors flying the latest glass-cockpit jets to island-hopping charter operators flying beat-up old bush planes, there's a virtual airline for everyone.

Once on board, you'll download the airline's aircraft, scenery, and training materials, and then use Flight Simulator 2002 to complete the assigned flights. You'll send reports of your flights back to the airline and work your way through different routes, aircraft, and ratings.

Participating in most virtual airlines is free, although some sites do charge a small user fee. The virtual airline community on the Web is growing rapidly. There are new airlines every day, and a number of organizations are taking leadership roles within the Flight Simulator community—providing enthusiasts with news, airline directories, and bulletin boards.

EXPANDING YOUR HOBBY

Add-Ons

Amateur and professional software developers all over the world have created products that can enhance your Flight Simulator 2002 experience. Check the shelves of your local computer store, and be sure to look on the Web. (Many downloadable add-ons are freeware or shareware.) Add-ons are usually easy to install and fun to use.

If you like flying a variety of aircraft, there are literally thousands to choose from. There are also add-on avionics packages that simulate the latest display and navigation technology. In addition, you can download specialized scenery areas that add extra detail to many parts of the world. Create your own add-ons using utilities such as aircraft, panel, scenery, and adventure builders.

Your Desktop Cockpit

If you want to make your desktop seem more like the cockpit of a real airplane, add some hardware. The options range from full desktop consoles with working switches, down to a more basic configuration that includes joystick or yoke, and

rudder pedals. You can find these accessories at many computer stores and on the Web.

JOYSTICK OR CONTROL YOKE

While you don't need a joystick or control yoke to use Flight Simulator 2002, veteran simulator pilots agree that those controllers are particularly able to provide a realistic, enjoyable experience. There are many models to choose from, ranging from stripped-down, basic models to full-blown control sets with more buttons and knobs than you'll know what to do with. Ideally, a joystick or control yoke should come with a built-in throttle control and mixture and propeller controls.

RUDDER PEDALS

Real-world pilots fly using their hands *and* feet. Plug in a pair of rudder pedals, and you'll find that you have much greater control over the simulated aircraft you fly. Coordinating rudder and aileron when making turns provides both a smoother turn and a more realistic experience. Rudder pedals are especially useful if you like flying the Bell 206B JetRanger helicopter.

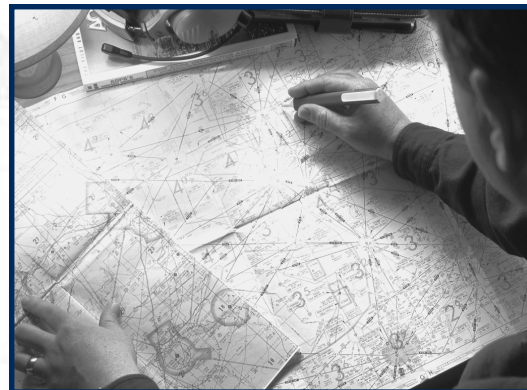
EXPANDING YOUR HOBBY

EXTERNAL THROTTLE

Allowing for much finer control, an external throttle will be especially helpful for pilots interested in flying the Bell 206B. As with a joystick, there are many types of external throttles to choose from. Experiment and find what works best for you.

Pilot Supplies

As a Flight Simulator 2002 pilot, you'll find many real-world pilot supplies useful. Find a local flight school or pilot's shop in the phone book, and then go see what they have. Someone there will be glad to show you around. (And they'll probably try to sign you up for flying lessons, too!) Maybe you'll become a student pilot; maybe you'll just walk out with an armload of aviation toys. Either way, it will have been a worthwhile trip. If you'd rather do your shopping from the comfort of home, there are a number of well-known pilot supply companies that do business on the Web. Search the Web for "pilot's shop." While you're shopping, take a look at the aviation charts, calculators, course plotters, and radio scanners.



Most stores have a lot of aviation books, too, on subjects such as aircraft and aircraft systems, weather, navigation, communications, training, and more.

For even more information about Flight Simulator 2002, you can look to Sybex's "Microsoft Flight Simulator 2002: Sybex Official Strategies and Secrets." This book provides in-depth information about all of Flight Simulator 2002's features. Everyone from beginners to experts will find something in Sybex's handy guide.

EXPANDING YOUR HOBBY

Fly for Real

Flight Simulator 2002 is a game, a simulation, and a training aid all rolled into one package. Many Flight Simulator enthusiasts have gone on to become licensed pilots, and many pilots (both recreational and professional) use Flight Simulator to have fun and practice their skills. Thanks to Flight Simulator, it's not unusual these days for a new student to arrive at the airport for her first flight lesson already knowing about control towers, stalls, and the horizontal component of lift.

Flight Simulator 2002 provides a comfortable, relaxed atmosphere in which to learn and practice the fundamentals of visual and instrument flying, including:

- Operating flight and engine controls
- Using and interpreting flight instruments
- Using navigational aids
- Flying in an airport environment
- Flying solely by reference to instruments
- Understanding and managing systems failures
- Interacting with air traffic control

GETTING CERTIFIED

Student pilots using Flight Simulator 2002 can isolate specific tasks and focus on them without the distractions and complexities of flying a real aircraft in a busy airspace. Instructors can use Flight Simulator 2002 as an interactive tool for pre- and post-flight demonstrations, as well as for classroom presentations. The ability to save specific flight situations as Flights, to record and play back “videos” of your Flights, and to induce systems failures is particularly useful to instructors. Keep in mind, however, that while Flight Simulator 2002 is a great *complement* to flight training, it's not a substitute for instruction from a certified flight instructor and is not part of an approved training program under the standards of the FAA or any other regulatory authority.

The “Getting Certified” section of Getting More from Flight Simulator 2002 describes the path real-world pilots take in their training and lays out a curriculum you can follow to climb the career ladder within Flight Simulator 2002.

Whether attracted to the technology, the speed, or the simple beauty of the sky, all pilots share a passion for what they do.

They climb up the aviation ladder one step at a time, increasing and improving their skills along the way. They study hard, spend many hours receiving instruction and building flight time, and then they must pass in-depth knowledge and practical examinations to mark their progress.



A similar systematic (but, thankfully, less rigorous) approach will help you build your skills as a Flight Simulator 2002 pilot. You're free, of course, to explore the simulation on your own. But to really fly well in Flight Simulator, read on.

GETTING CERTIFIED

Getting Certified in Flight Simulator 2002

Using Flight Simulator 2002 Interactive Lessons, you can receive certifications from Student Pilot level to ATP. Feel free to follow this curriculum at your own pace, certifying at whatever levels you choose.

Rod Machado's Ground School is the first step toward beginning-level certification. A flight instructor, aviation educator, and humorist, Rod Machado will walk you through the basics of flying. Each ground school class starts with some homework; read the suggested material in the onscreen Help and watch the videos, and you'll be better prepared to absorb the information to come. With Rod's assistance, learning is fun, and you'll be in the air before you know it.

Interactive Lessons team you up with a virtual instructor who guides you through maneuvers step-by-step. The Interactive Lessons complement Rod Machado's Ground School and increase in difficulty as your skill level increases.

Checkrides put you in the virtual cockpit with an examiner who will test your mastery of certain tasks. Before you take a Checkride, make sure you've met the prerequisites listed in the Preflight Briefing. Once you pass, you'll be awarded a certificate that you can print, frame, and hang on your wall.

Lessons and Checkrides are real-time, interactive experiences in the cockpits of Flight Simulator 2002 aircraft. To get to them, click **Lessons** on the **Flights** menu. Before you go flying, be sure to watch any associated videos and study the Preflight Briefings.

After you've completed a series of Interactive Lessons and passed the associated Checkride, try flying some of the suggested Flights—they're a fun way to use your new skills. Flights range from short, dramatic scenarios lasting a few minutes to lengthy, realistic flights of several hours that includes interaction with air traffic control.

GETTING CERTIFIED

Private Pilot Certificate

The first step in a Flight Simulator 2002 career is to become a private pilot. This training is the foundation for everything else you'll learn. In Ground School and Interactive Lessons, you'll fly a Cessna 172 and learn basic flight maneuvers and radio navigation. Master these skills, and the rest of your training will go more smoothly. Complete these steps in sequence:

PRIVATE PILOT

Lesson 1: Taxiing

Learn how to maneuver the airplane on the ground at Bremerton National Airport (KPWT) in Washington State.

Lesson 2: Stalls and Steep Turns

Become proficient at steep turns—you'll learn to fly more precisely and to divide your attention between the instruments and the view outside; in this case, a view of the Olympic Mountains.

Lesson 3: Navigation

Master a basic form of radio navigation using a VHF Omnidirectional Range (VOR) at Paine Field (KPAE) in Everett, Washington.

Lesson 4: Flying the Pattern

Learn to fly a standard traffic pattern around Paine Field.

Lesson 5: Crosswind Landings

Learn how to smoothly land the plane when the wind seems to be working against you.

Checkride

It's time to put it all together for the examiner. Meet the high standards, and you'll be awarded a Private Pilot certificate.

Instrument Rating

Just like in the real world, getting an Instrument Rating in Flight Simulator 2002 will make you a more versatile pilot. You'll also be able to take better advantage of Flight Simulator's navigation and weather features. You'll do your instrument training in the same aircraft you used for your private pilot certification, the Cessna 172. While the basic maneuvers are the same, this time you'll learn to perform them using solely your instruments for reference. You'll master the art of the *instrument scan* and learn the intricacies of flying *instrument approaches*.

GETTING CERTIFIED



There are few thrills in aviation like taking off into the clouds, flying for a few hours, and then breaking out of the murky skies with another airport's runway directly ahead. By the time you finish your instrument training, you'll be capable of getting from here to there in almost any weather. Here are the steps:

INSTRUMENT PILOT

Lesson 1: Attitude, Power, and Trim

Master the basics of instrument flight: a proper scan.

Lesson 2: Holding Patterns

Learn how to "pull into a parking space in the sky" in a holding pattern over the Paine VOR.

Lesson 3: Non-Precision Approaches

Learn how to use the VOR to get you down to the runway at Paine Field.

Lesson 4: Precision Approaches

You'll leave Paine Field to fly to Boeing Field in Seattle (KBFI) using the Instrument Landing System (ILS).

Checkride

Take an examiner for a cloudy day's ride in a Cessna 172. Pass, and you'll be awarded the Instrument Rating.

Commercial Pilot Certificate

In the real world, commercial training focuses on advanced flight maneuvers. In Flight Simulator 2002, we'll stray from the real-world curriculum so that you can perfect the instrument flying skills you'll have already acquired. This time, you'll fly an aircraft with retractable landing gear—the Cessna 182RG. The training will be similar to your instrument training, except that all the tolerances will be tighter and

GETTING CERTIFIED

you'll do all your flying in the clouds (in what pilots call *Instrument Meteorological Conditions*, or IMC). After passing the Commercial Pilot Checkride, you'll be ready to try flying more advanced aircraft. That journey begins with these steps:

COMMERCIAL PILOT

Lesson 1: VOR Hold

Hold the Cessna 182RG over the Richmond, Virginia VOR in IMC.

Lesson 2: VOR Approach with Procedure Turn

Take the Cessna 182RG through a full VOR approach to the Flying Cloud Airport near Minneapolis, Minnesota in IMC.

Lesson 3: ILS Approach, Straight-In

Guide the Cessna 182RG down an Instrument Landing System (ILS) approach to Space Center Executive Airport in Titusville, Florida in IMC.

Lesson 4: ILS Approach with Procedure Turn

Fly a full ILS approach in the Cessna 182RG to Long Island MacArthur Airport in Islip, New York in IMC.

Checkride

Show an examiner that you're ready to get paid to fly. The standards are higher and the tolerance for errors are smaller than in previous Checkrides. Fly the Cessna 182RG well, and you'll be awarded the Commercial Pilot certificate.

Airline Transport Pilot Certificate

Most commercial airline pilots who fly jets have an ATP certificate, and if you're serious about developing your skills, you should, too. In the real world, the training can be done in a single-engine propeller-driven airplane. In *Flight Simulator 2002*, you'll have to prove yourself in the cockpit of a Boeing 737 jet. Up for the challenge? Follow these steps:

AIRLINE TRANSPORT PILOT

Lesson 1: VOR Hold

Hold the Boeing 737-400 over the Cincinnati, Ohio VOR in VMC.

Lesson 2: VOR Approach with Procedure Turn

Take the Boeing 737-400 through a full VOR approach to JFK International Airport in New York in VMC.

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Lesson 3: ILS Approach, Straight-In

Guide the Boeing 737–400 down an ILS approach to Space Center Executive Airport in Titusville, Florida in VMC.

Lesson 4: ILS Approach with Procedure Turn

Fly a full ILS approach in the Boeing 737–400 to Long Island MacArthur Airport in Islip, New York in VMC.

Checkride

Share the cockpit with an examiner one last time. It doesn't get any more challenging than this! Pass, and you'll get the ATP certificate.

Getting Certified in the Real World

Requirements for pilot certification vary from country to country, but the training is similar no matter where you are. In this section, we'll examine the typical career path a pilot takes in the United States. The Federal Aviation Regulations concerning pilot certification are quite detailed. See section 61 of the Federal Aviation Regulations for more information. What follows is a simplified overview.

PRIVATE PILOT CERTIFICATE

Becoming a private pilot is the first step in an aviation career, and one many pilots never go beyond. Although it's possible to get a Private Pilot certificate in a multiengine airplane, seaplane, glider, helicopter, balloon, blimp, or gyroplane, most students do their initial training in a single-engine, land-based airplane.

In *ground school*, a pilot-to-be learns about regulations, navigation, radio communication, weather, aircraft operation and performance, aerodynamics, aircraft systems, emergency procedures, and decision-making.

In *flight training*, the work focuses on acquiring basic skills: preflight preparation and procedures, airport operations, flight maneuvers, navigation, basic instrument maneuvers, emergency operations, night operations, and post-flight procedures. A typical student spends 20 to 30 hours flying dual with an instructor and then practices his or her skills by flying solo for another 20 hours or so.

To get the Private Pilot Certificate, the student must pass a simple medical examination, a computerized knowledge

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test, and oral and flight examinations given by an examiner designated by the Federal Aviation Administration (FAA).

While some private pilots use an airplane as a means of personal or business transportation, most fly just for the fun of it. Private pilots can take their family and friends flying during the day or at night. Without an Instrument Rating (described in the next section) private pilots can fly only when they can stay out of the clouds, when the visibility is good enough to see other aircraft and the ground. While private pilots can share expenses with their passengers, they can't be paid for their flying. The Private Pilot certificate has its limitations, to be sure, but for thousands of recreational aviators, it's all they need to have fun on the weekends or to get from here to there quickly and in style.

INSTRUMENT RATING

For private pilots tired of being stuck on the ground when the weather's bad, or for those with career aspirations, the next logical step in flight training is acquiring an Instrument Rating. Instru-

ment training gives a private pilot the skills to fly in the clouds and in reduced visibility using only the instruments in the cockpit. A pilot with an Instrument Rating operates under different rules than a pilot flying visually.

Just as in private pilot training, the Instrument Rating requires ground school and a knowledge test. The focus is on learning to fly and navigate using only the instruments and on learning to communicate effectively with air traffic controllers. During the required 40 hours of instrument flight training, the student usually wears a view-limiting device (a special visor or goggles) that prevents him or her from looking out the window.

Getting the Instrument Rating is both challenging and rewarding. It makes flying a more reliable mode of transportation, refines basic flying skills, and enables a private pilot to fly in the same air traffic control system that airline pilots use. For pilots attracted to aviation gadgetry, there's nothing better than flying "on the gauges."

GETTING CERTIFIED

COMMERCIAL PILOT CERTIFICATE

For pilots looking to make a career out of flying, the step after acquiring an Instrument Rating is the Commercial Pilot certificate. (While a pilot doesn't have to have an Instrument Rating to get a Commercial Pilot certificate, most commercial flying jobs require it.) With a Commercial Pilot certificate in hand, a pilot can finally get paid to fly!

Commercial Pilot ground school, flight training, and examinations are similar to those faced by private pilots, but there are new regulations, calculations, and maneuvers to master. In addition, the tolerances for errors are much smaller. At least some of the training must be done in a *complex* aircraft (an aircraft with an adjustable propeller, flaps, and retractable landing gear). The flight training consists of 20 hours or more of instruction, and a pilot needs at least 250 hours of total flight time before taking the oral and flight examinations.

Entry-level commercial pilots typically spend their days flying charter flights and scenic tours, towing banners, hauling freight, or carrying sky divers. Adding a Multiengine Rating or a Flight Instructor certificate makes commercial pilots more marketable, as does the Airline Transport Pilot certificate (described in the next section).

After accumulating about 1,000 hours of flying time and some experience in complex single-engine and multiengine aircraft, a commercial pilot may be ready to fly for a corporation or a commuter airline. On twin-engine or turbine-powered aircraft, the rookie will likely act as the copilot.

AIRLINE TRANSPORT PILOT CERTIFICATE

The Airline Transport Pilot certificate (known as the ATP) is the Ph.D. of aviation, and is a prerequisite for many airline and corporate flying jobs. It allows a pilot to act as *pilot in command* during the commercial operation of an airliner.

GETTING CERTIFIED

ATP ground school and the knowledge test emphasize airline-oriented information and skills, focusing on subjects like weight and balance, aircraft performance, and crew resource management. The flight training takes a pilot's existing skills to even higher levels of precision. Before undergoing the ATP oral and flight examinations, a pilot needs to have logged at least 1,500 hours total time as a pilot.

Once a pilot secures a position (usually copilot, also known as first officer) with a major airline or corporation, advancement to better routes, larger aircraft, and the rank of captain is usually based on seniority.

In many ways, Flight Simulator 2002 is even better than reality—with just a few clicks of the mouse, you can instantly change your aircraft, location, and the weather, midflight. When was the last time you were in a real plane that could do *that*? Read on to learn more about the exciting features Flight Simulator 2002 has to offer.

EXPLORING THE FEATURES

Aircraft

When you first start Flight Simulator 2002, you'll be flying the Cessna 172SP. Want to switch to something bigger, like the Boeing 747, or something a little different, like the Bell Helicopter? Whether you're on the ground or in the air, you can easily change aircraft and the options that affect how your aircraft flies.

AIRCRAFT FEATURES

Select Aircraft

See pictures, descriptions, and specifications for each aircraft in the Flight Simulator 2002 fleet, and select the one you want to fly. On the **Aircraft** menu, choose **Select Aircraft**.

Fuel

Change the amount of fuel in each tank to change your aircraft's weight, performance, and range. On the **Aircraft** menu, select **Fuel**.

Realism Settings

Quickly set the realism level of your Flight Simulator 2002 experience using sliders, or manually select specific realism options that affect:

- The aircraft's flight characteristics
- The instruments and lights
- The engines and propeller
- Crashes and damage
- The flight controls

On the **Aircraft** menu, select **Realism Settings**.

System Failures

Set failures for instruments, systems, and radios (either randomly or for a specific instrument) to make your Flight Simulator 2002 Flights more realistic and challenging. On the **Aircraft** menu, select **System Failures**.

Air Traffic Control

Flight Simulator 2002 includes a new, interactive air traffic control feature that makes flying the simulator more realistic than ever before. With air traffic control, you're now able to:

- Hear other air traffic in the busy Flight Simulator skies
- Receive VFR Flight Following and transitions

EXPLORING THE FEATURES

- Hear the names of over 3,000 airport towers and other control facilities
- Choose your favorite of 10 different air traffic controller voices
- Choose from over 100 airline names that you can use for your callsign

USING THE ATC MENU

Use the tilde (~) key to display or hide the ATC menu. Use the numbers on the top of the keyboard to make choices from the ATC menu.

SETTINGS

Specify how much traffic you want in the air around you as you fly. Choose the voice of your air traffic controller. Air traffic control settings are customizable to fit your needs.

USING THE AUTOTUNE FEATURE

When autotune is on, Flight Simulator 2002 will tune the communications radio for you. Autotune will tune in the correct frequency when you choose an item from the ATC menu that requires a change to a new frequency.

CHANGING THE AIRCRAFT CALLSIGN

A callsign is the name that ATC uses to address your aircraft. Your ATC callsign is fully customizable from within the ATC menu.

For more in-depth coverage of ATC, see the **Air Traffic Control Handbook** in the **Library & Help** section.

Views and Windows

You can use the features on the Views menu to see the same things you'd see from the cockpit of a real airplane—and more. Different views serve different purposes—experiment with them to find your favorites. Use either the joystick's hat switch or key commands to “turn your head.”

To learn more about using views and windows, see the **Simulator Help** section of **Help**. For a list of view-related key commands, see the **Before You Fly Handbook**. You can easily assign your favorite views to joystick buttons or your own custom key commands.

EXPLORING THE FEATURES

VIEWS AND WINDOWS FEATURES

Virtual Cockpit

Turn your head and take a look around! With this new view for Flight Simulator 2002, you can “swivel” your head and look all the way around the cockpit. Use your joystick’s hat switch, or press **SHIFT + 1-9** on the number pad, with the Num Lock key off. Zoom in and out using the plus (+) and minus (-) keys.

Cockpit View

See what real-world pilots see looking directly over the instrument panel. This is the default view. On the **Views** menu, point to **View Mode**, and then select **Cockpit**. Or, press **S** to cycle through Cockpit, Tower, Track, and Spot Plane views.

Tower View

See yourself from the control tower window. On the **Views** menu, point to **View Mode**, and then select **Tower**. Or, press **S** to cycle through Cockpit, Tower, Track, and Spot Plane views

Track View

Track another aircraft from your cockpit. This view is available only in multiplayer flight. On the **Views** menu, point to **View**

Mode, and then select **Track**. Or, press **S** to cycle through Cockpit, Tower, Track, and Spot Plane views.

Spot Plane View

Watch your aircraft from a spot plane that you can reposition. On the **Views** menu, point to **View Mode**, and then select **Spot Plane**. Or, press **S** to cycle through Cockpit, Tower, Track, and Spot Plane views. To jump to Spot Plane view directly from Cockpit view, press **SHIFT+S**.

Top-Down View

A bird’s-eye view of your aircraft and the ground beneath it. On the Views menu, point to **View Mode**, and then select **Top-Down**.

Secondary Instrument Panel Components

Display secondary instrument panel windows to view radios, GPS, throttle quadrants, and other cockpit items. On the **Views** menu, point to **Instrument Panel**, and then select one of the panel components to display it.

EXPLORING THE FEATURES

Flight Planning and Navigation

Flight Simulator 2002 starts with your Cessna 172SP on the ground at the end of Runway 36 at Merrill C. Meigs Field in Chicago. After you get to know your way around the city, you'll probably want to try flying somewhere else. You can instantly reposition your aircraft to a new location on the ground or in the air, or plan an entire flight.

FLIGHT PLANNING AND NAVIGATION FEATURES

Go to Airport

Position your aircraft on a specific runway at one of more than 20,000 airports. If you don't know an airport's name or alphanumeric identifier, you can search for it by geographical area. On the **World** menu, select **Go to Airport**.

Map View

Look at airports, navigational aids, airways, airspace, general geographical information, and the course you've been tracking. You can enter the latitude, longitude, altitude, heading, and airspeed you want, or drag the aircraft symbol

across the map to reposition it. Clicking airports and navigational aids displays information about them. On the **World** menu, select **Map View**.

GPS (Moving Map)

Navigate the modern way, that is, directly from waypoint (a point of reference along your route) to waypoint, using a Global Positioning System (GPS) receiver displayed in its own window. On the **Views** menu, point to **Instrument Panel**, and then select **GPS**.

Flight Planner

Create or load a VFR or IFR flight plan. Define your own route, or select autorouting by way of:

- Direct GPS
- Low altitude airways
- High altitude airways
- VOR to VOR

On the **Flights** menu, select **Flight Planner**.

EXPLORING THE FEATURES

Navigation Log

View the details of your flight plan. Information provided for each leg includes:

- Altitude
- True airspeed
- Wind direction and speed
- Magnetic heading
- Estimated groundspeed
- Fuel consumption
- Time en route

On the **Flights** menu, select **Navigation Log**.

Slew Mode

Rapidly change your aircraft's attitude, location, or altitude without actually flying in real time. This is a great way to check out the scenery. Press **Y**. Or, on the **Aircraft** menu, select **Slew Mode**.

Weather

From a clear blue sky to a turbulent storm with rain, freezing rain, hail, snow, lightning, or thunder, your weather options are virtually limitless. Flight

Simulator 2002 gives you as much control over the weather conditions as you want. And for the ultimate realism, download the latest real-world weather.

WEATHER FEATURES

Real-World Weather

Download the current real-world weather conditions and forecast winds aloft for thousands of weather reporting stations. Flight Simulator 2002 automatically connects your computer to a server on the MSN Gaming Zone, downloads the real-world conditions, and then re-creates them in Flight Simulator 2002. On the **World** menu, select **Weather**, and then click the **Real-World Weather** button.

Basic Weather

Set general levels for clouds, precipitation, visibility, and the wind's strength and direction. You can set weather for the entire Flight Simulator 2002 world or for individual reporting stations, as displayed on a map. On the **World** menu, select **Weather**.

EXPLORING THE FEATURES

Advanced Weather

Gain even more control over the weather you fly through. You can define individual layers of weather, each with its own:

- Cloud type and coverage
- Icing and precipitation
- Wind speeds, gusts, turbulence, and shear strength
- Temperature, dew point, and pressure
- Visibility

On the **World** menu, select **Weather**, and then click **Advanced Weather**.

Videos, Analysis, and Logging

While real-world pilots have to carry cameras, journals, and logbooks to record their flights for posterity, in Flight Simulator 2002, you can track your flight time and review your performance automatically.

VIDEO, ANALYSIS, AND LOGGING FEATURES

Flight Video

Record “videos” of your Flights. Use the videos to enhance your training or to impress your friends. On the **Options** menu, select **Flight Video**.

Instant Replay

Replay the last 50 seconds of your current flight at any time—watch the drama unfold at any speed and from any view. On the **Options** menu, select **Instant Replay**.

Logbook

Keep track of your Flight Simulator 2002 flight time, either automatically or manually. On the **Options** menu, select **Logbook**.

Simulator Settings

Some Flight Simulator 2002 settings are maintained from one session to another. Here are overviews of some of the most useful settings. For complete documentation of every menu item and dialog box, see the **Simulator Help** section of **Help**.

SIMULATOR SETTINGS FEATURES

Control Assignments/Sensitivities

Customize which keys and joystick buttons do what and how your joystick behaves. On the **Options** menu, point to **Controls**, and then select **Assignments** or **Sensitivities**.

EXPLORING THE FEATURES

General Settings

Change the default Flight and other general settings. On the **Options** menu, point to **Settings**, and then select **General**.

Display Settings

Configure Flight Simulator 2002 to effectively use your video card, and choose display options that make trade-offs between graphics quality and performance. On the **Options** menu, point to **Settings**, and then select **Display**.

Instrument Settings

Change whether the airspeed indicator shows indicated or true airspeed and how radio frequencies are displayed. On the **Options** menu, point to **Settings**, and then select **Instrument**.

International Settings

Define the units of measurement used in various features. On the **Options** menu, point to **Settings**, and then select **International**.

Sound Settings

Change the volume of individual sounds. On the **Options** menu, point to **Settings**, and then select **Sound**.

Add-On Scenery

For experienced Flight Simulator enthusiasts, adding scenery provides a particularly satisfying simulation experience. Adding scenery to Flight Simulator 2002 is more straightforward than ever.

ADD-ON COMPATIBILITY

Any add-on gauges or applications based on Fs6lpc.dll, or using techniques requiring variables to be in specific locations in memory will not work and may cause crashes.

Many add-on scenery areas that rely on elevated polygons to be resting on perfectly flat areas will look incorrect due to the variation in elevation caused by the new terrain system. Further information on how to avoid this problem can be found in updates to the Flight Simulator SDK.

ADD-ON SCENERY

Some backward-compatible / add-on sceneries may not appear as expected. The factors most commonly responsible for such problems are:

- Flight Simulator 2002 uses a digital elevation mesh terrain system instead of the flat “seed” system from prior versions.

EXPLORING THE FEATURES

- Flight Simulator 2002 incorporates nearly every airport and published navigational aid in the entire world.
- Flight Simulator 2002 now utilizes Autogen scenery, which places objects in most locations around the globe.

If you are seeing problems with your add-on scenery, please first refer to the scenery creator. They may have patches or updates that will fix the problems. If no patches or updates are available, Flight Simulator 2002 has two “switches”—Flatten and Exclude—that can be used in the Scenery.cfg file (located in the main FS2002 folder) to solve a great number of visual problems with backward-compatible / add-on scenery. The Flatten switch flattens a given four-sided area to a single, specified elevation. The Exclude switch excludes the default Microsoft scenery (objects or navigational aids) in a given four-sided area from being displayed (or transmitted, in the case of radio navigational aids).

Both switches affect only Scenery areas with a lower layer number than the Scenery area in which they are added. For example, if the switch is placed in

layer 70, then only layers 69 and below will be affected. Switches are added to the end of a scenery area entry in the Scenery.cfg file using a text editor. Exclude and Flatten switches can both be added to the same Scenery area.

How to Use the Flatten Switch

THE FLATTEN SWITCH SYNTAX IS AS FOLLOWS:

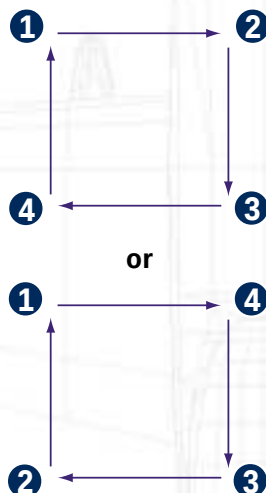
Flatten.X=Elevation, Latitude1, Longitude1, Latitude2, Longitude2, Latitude3, Longitude3, Latitude4, Longitude4

X is equal to a number between 0 and 9, but you must start with Flatten.0, then Flatten.1, and so on, up to Flatten.9. You are allowed a maximum of 10 Flatten switches per Scenery area (thus the numbers 0-9).

The Elevation is in feet above or below mean sea level (MSL) and can be any number between -2000 and 99999.

The Latitude and Longitude of points 1, 2, 3, and 4 must be entered in a clockwise or counterclockwise fashion about the four-sided area, for example:

EXPLORING THE FEATURES



These must be in the form of degrees and minutes. You do not need to add the * or ' symbols to indicate degrees and minutes, and the shape does not have to be a rectangle. Any four-sided shape will work.

The maximum size of a flattened area is 10 degrees of longitude and 10 degrees of latitude.

EXAMPLE: This example flattens two

separate but adjacent regions inside the Scenery area to an elevation of 1,000 feet MSL.

[Area.100]

Group=Your Area

ID=Your Area

Title=Your Area

Active=TRUE

Layer=100

Local=C:\Your Area

Flatten.0=1000,N45 30,W120,N45 30,W119 30,N45,W119 30,N45,W120

Flatten.1=1000,N45,W120,N45,W119 30,N44 30,W119 30,N44 30,W120

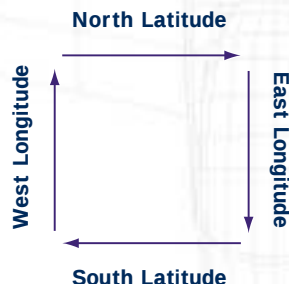
EXPLORING THE FEATURES

How to Use the Exclude Switch

THE EXCLUDE SWITCH SYNTAX IS AS FOLLOWS:

Exclude=North Latitude,West Longitude,South Latitude,East Longitude,category

Exclusion happens only in a rectangular area, for example:



These must follow the form: North Latitude, West Longitude, South Latitude, East Longitude. The Latitude and Longitude entries must be in the form of degrees and minutes. You do not need to add the * or ' symbols to indicate degrees and minutes.

The category determines which default scenery type you choose to exclude in the defined area. There are four categories:

Objects - Excludes all default three-dimensional buildings and objects as well as airports.

Vors - Excludes all default VOR and ILS navigational aids.

Ndbb - Excludes all default NDB navigational aids.

All - Excludes all default objects and navigational aids

You can use one or more categories in an Exclude switch.

The maximum size of an Exclude area is 90 degrees of longitude and 45 degrees of latitude.

EXPLORING THE FEATURES

EXAMPLE: This example excludes all scenery types EXCEPT NDB navigational aids from a rectangular area.

[Area.100]

Group=Your Area

ID=Your Area

Title=Your Area

Active=TRUE

Layer=100

Local=C:\Your Area

Exclude=N45 30,W120,N45,W119
30,objects,vors

KEY COMMANDS

NOTE: Make sure Num Lock is OFF before using Num Pad commands.

Simulator Commands

Pause	P
Full Screen Mode (no menus or taskbar)	ALT + ENTER
Display Menus (in Full Screen mode)	ALT
Kneeboard Display / Hide	F10
Sound On / Off	Q
Reset Current Flight	CTRL+; (SEMICOLON)
Save Flight	; (SEMICOLON)
Exit Flight Simulator	CTRL+C
Exit Flight Simulator Immediately	CTRL+BREAK
ATC Window Display / Hide ...	' (ACCENT)
Joystick On / Off	CTRL+K
Cycle Coordinates / Frame Rate	SHIFT+Z
Select Item 1	1
Select Item 2	2
Select Item 3	3

Select Item 4	4
Select Time Compression	R
Increase Selection	= (EQUAL SIGN)
Increase Selection Slightly	SHIFT+= (EQUAL SIGN)
Decrease Selection Slightly	SHIFT+- (MINUS SIGN)
Decrease Selection	- (MINUS SIGN)

Control Surface Commands

Bank Left (ailerons)	Num Pad 4
Bank Right (ailerons)	Num Pad 6
Aileron Trim Left	CTRL+Num Pad 4
Aileron Trim Right	CTRL+Num Pad 6
Yaw Left (rudder)	Num Pad 0
Yaw Right (rudder)	Num Pad ENTER
Rudder Trim Left	CTRL+ Num Pad 0
Rudder Trim Right	CTRL+Num Pad ENTER
Center Ailerons and Rudder	Num Pad 5
Pitch Down (elevator)	Num Pad 8
Pitch Up (elevator)	Num Pad 2

KEY COMMANDS

Elevator Trim Down	Num Pad 7	Increase Throttle	F3 or Num Pad 9
Elevator Trim Up	Num Pad 1	Full Throttle	F4
Retract Flaps (fully)	F5	Reheat / Afterburner On / Off ...	SHIFT+F4
Retract Flaps (in increments)	F6	Set Prop RPM to Low	CTRL+F1
Extend Flaps (in increments)	F7	Decrease Prop RPM	CTRL+F2
Extend Flaps (fully)	F8	Increase Prop RPM	CTRL+F3
Extend / Retract Spoilers / Airbrakes	/	Set Prop RPM to High	CTRL+F4
	(FORWARD SLASH)	Set Mixture to	
Arm Autospoilers	SHIFT+ /	Idle Cutoff	CTRL+SHIFT+F1
	(FORWARD SLASH)	Lean Mixture	CTRL+SHIFT +F2
Water Rudder Up / Down	SHIFT+W	Enrich Mixture	CTRL+SHIFT+F3

Engine Commands

On multiengine aircraft, engine commands affect all engines unless you first select an engine by pressing E + engine number (1-4). To revert back to controlling all engines, press E + all engine numbers in quick succession (E, 1, 2, and so on).

Engine Autostart	CTRL+E	Set Mixture to Rich	CTRL+SHIFT+F4
Cut Throttle	F1	Carb Heat / Engine Anti-ice On / Off	H
Reverse Thrust		Select Engine	E
(turboprops / jets)	F2 (hold down)	Select Magnetos	M
Decrease Throttle	F2 or Num Pad 3	Select Jet Starter	J
		Increase Selection	= (EQUAL SIGN)
		Increase Selection Slightly	SHIFT+= (EQUAL SIGN)
		Decrease Selection Slightly	SHIFT+- (MINUS SIGN)
		Decrease Selection	- (MINUS SIGN)

KEY COMMANDS

General Aircraft Commands

Parking Brake Set / Release **CTRL+.**
(PERIOD)

Pushback Start / Stop **SHIFT+P**
(then press 1 or 2 to
turn tail right / left)

Brakes Apply / Release **(PERIOD)**

Apply Left Brakes **F11**

Apply Right Brakes **F12**

Landing Gear Up / Down **G**

Manually Pump Landing Gear **CTRL+G**

Smoke System On / Off **I**

Open Cowl Flaps
(in increments) **CTRL+SHIFT+V**

Close Cowl Flaps
(in increments) **CTRL+SHIFT+C**

Select Exit (then press
1-4 to open / close) **SHIFT+E**

Light Commands

All Lights On / Off **L**

Strobe Lights On / Off **O**

Panel Lights On / Off **SHIFT+L**

Landing Lights On / Off **CTRL+L**

Landing Light
Tilt Down ... **CTRL+SHIFT+Num Pad 2**

Landing Light
Tilt Left **CTRL+SHIFT+Num Pad 4**

Landing Light
Tilt Right **CTRL+SHIFT+Num Pad 6**

Landing Light
Tilt Up **CTRL+SHIFT+Num Pad 8**

Center Landing
Light **CTRL+SHIFT+Num Pad 5**

Radio Commands

ATC Window Display / Hide ... ' (**ACCENT**)

VOR 1 Indent On / Off **CTRL+1**

VOR 2 Indent On / Off **CTRL+2**

DME 1 Indent On / Off **CTRL+3**

DME 2 Indent On / Off **CTRL+4**

ADF Indent On / Off **CTRL+5**

Switch to Standby Frequency
on Selected Radio **X**

Select COM Radio **C**

Select NAV Radio **N**

Select OBS indicator **V**

Select ADF **A**

Set DME	F	Mach Hold
Set Transponder	T	Arm Autot
ase Selection	= (EQUAL SIGN)	Engage Au
ase Selection Slightly	SHIFT+= (EQUAL SIGN)	Takeoff (TOGA)
ase Selection Slightly	SHIFT+ (MINUS SIGN)	Autopilot M
ase Selection	- (MINUS SIGN)	Autopilot A
		Mode C
		Autopilot E
		Mode C
		Autopilot L
		Hold On
		Autopilot A
		Hold On
		Increase S
		Increase S
		Decrease
		Decrease
		Instrument
		Reset Hea
		Reset Alti
		Pitot Heat

Mach Hold On / Off	CTRL+M
Arm Autothrottle	SHIFT+R
Engage Autothrottle	
Takeoff / Go-Around	
(TOGA) Mode	CTRL+SHIFT+G
Autopilot Nav 1 Hold On / Off	CTRL+N
Autopilot Approach	
Mode On / Off	CTRL+A
Autopilot Back Course	
Mode On / Off	CTRL+B
Autopilot Localizer	
Hold On / Off	CTRL+O
Autopilot Attitude	
Hold On / Off	CTRL+T
Increase Selection	= (EQUAL SIGN)
Increase Selection Slightly	SHIFT+= (EQUAL SIGN)
Decrease Selection Slightly	SHIFT+- (MINUS SIGN)
Decrease Selection	- (MINUS SIGN)
Instrument Commands	
Reset Heading Indicator	D
Reset Altimeter	B
Pitot Heat On / Off	SHIFT+H

KEY COMMANDS

Select EGT Reference Pointer **U**

Increase Selection = (EQUAL SIGN)

Increase Selection Slightly **SHIFT+=**
(EQUAL SIGN)

Decrease Selection Slightly **SHIFT+
(MINUS SIGN)**

Decrease Selection - (MINUS SIGN)

View Commands

Panel On / Off **W**

Snap to Panel View ... **SHIFT+Num Pad 0**

Cycle Views (cockpit, virtual cockpit, tower, spot) **S**

Cycle Views Backwards **SHIFT+S**

Display / Hide Additional
Panel Windows (radios,
engine controls, GPS,
and so on.) **SHIFT + 1 through 9**

Aircraft Labels
Display / Hide **CTRL+SHIFT+L**

Create New View Window [(LEFT BRACKET)

Create New Top-Down
View Window **SHIFT+]**
(RIGHT BRACKET)

Close View Window]
(RIGHT BRACKET)

Bring Window
To Front ' (**APOSTROPHE**)

Zoom In = (EQUAL SIGN)

Zoom Out - (HYPHEN)

Set Zoom to 1X **BACKSPACE**

Instrument Panels
On / Off..... **SHIFT+[(LEFT BRACKET)**

Switch To Top-Down View **CTRL+S**

Switch To Next View **CTRL+TAB**

Switch To Previous
View **CTRL+SHIFT+TAB**

Select View Direction Num Pad /
(FORWARD SLASH)

Look Ahead **SHIFT+Num Pad 8**

Look Ahead / Right **SHIFT+Num Pad 9**

Look Right **SHIFT+Num Pad 6**

Look Back / Right **SHIFT+Num Pad 3**

Look Back **SHIFT+Num Pad 2**

Look Back / Left **SHIFT+Num Pad 1**

Look Left **SHIFT+Num Pad 4**

Look Ahead / Left **SHIFT+Num Pad 7**

Look Up **CTRL+Num Pad 5**

KEY COMMANDS

Look Ahead / Up **CTRL+Num Pad 8**
Look Ahead /
Right / Up **CTRL+Num Pad 9**
Look Back /
Right / Up **CTRL+Num Pad 3**
Look Back / Up **CTRL+Num Pad 2**
Look Back /
Left / Up **CTRL+ Num Pad 1**
Look Ahead /
Left / Up **CTRL+Num Pad 7**
Look Down **SHIFT+Num Pad 5**
Move Eyepoint Back **CTRL+ENTER**
Move Eyepoint
Down **SHIFT+BACKSPACE**
Move Eyepoint
Forward **CTRL+BACKSPACE**
Move Eyepoint
Left **CTRL+SHIFT+BACKSPACE**
Move Eyepoint
Right **CTRL+SHIFT+ENTER**
Move Eyepoint Up **SHIFT+ENTER**
Reset Eyepoint **SPACE**
Pan View Reset **SHIFT+Num Pad DEL**

Chase View On / Off **CTRL+Q**
Cycle Chase View
Backward **CTRL+SHIFT+W**
Cycle Chase View Forward **CTRL+W**

Slew Commands

Slewing allows you to rapidly reposition your aircraft without flying in real time. Use these commands to slew.

Slew Mode On / Off **Y**
Set Heading North / Attitude
Straight-and-Level **SPACEBAR**
Freeze All Movement **Num Pad 5**
Move Forward **Num Pad 8**
Move Backward **Num Pad 2**
Move Left **Num Pad 4**
Move Right **Num Pad 6**
Move Up Slowly **Q or F3**
Move Up Quickly **F4**
Move Down Slowly **A**
Move Down Quickly **F1**
Freeze Vertical Movement **F2**

KEY COMMANDS

Rotate Left **Num Pad 1**
Rotate Right **Num Pad 3**
Move Nose Up **9**
Move Nose Up Quickly **F5**
Move Nose Down **F7 or 0**
Move Nose Down Quickly **F8**
Freeze Pitch **F6**
Bank Left **Num Pad 7**
Bank Right **Num Pad 9**
Move Eyepoint Up **SHIFT+ENTER**
Move Eyepoint
Down **SHIFT+BACKSPACE**
Move Eyepoint
Left **CTRL+SHIFT+BACKSPACE**
Move Eyepoint
Right **CTRL+SHIFT+ENTER**
Move Eyepoint
Forward **CTRL+BACKSPACE**
Move Eyepoint Back **CTRL+ENTER**

Multiplayer Commands

Track Mode On / Off **CTRL+SHIFT+D**
Cycle Through Other
Players **CTRL+SHIFT+T**
Follow Other Player **CTRL+SHIFT+F**
Switch To Observer
Mode **CTRL+SHIFT+O**
Chat Window
Display / Hide **CTRL+SHIFT+]**
(RIGHT BRACKET)
Switch Focus to Chat Window **ENTER**

To add or customize keyboard commands and joystick buttons, on the **Options** menu, point to **Controls**, then click **Assignments**.

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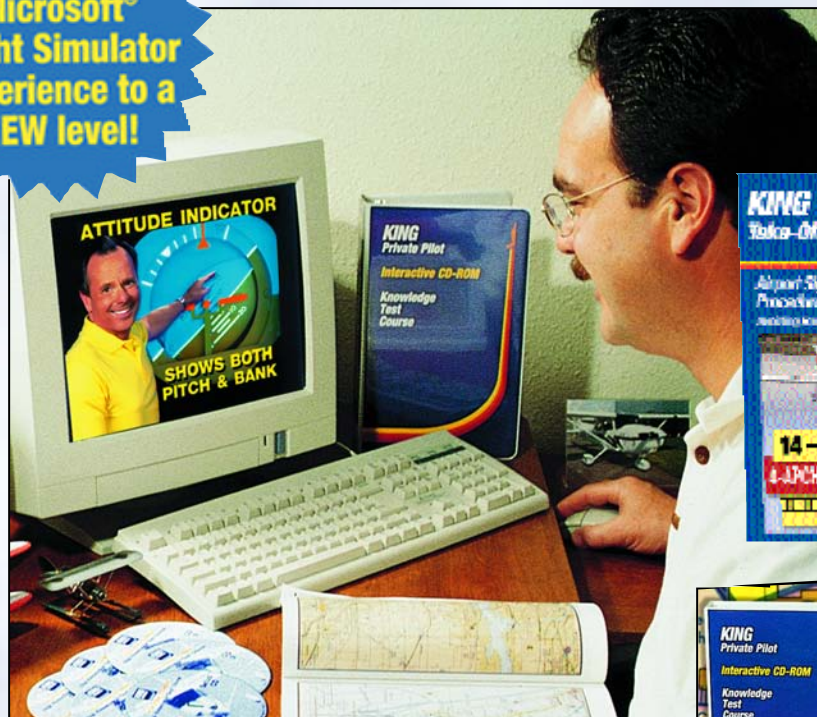
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